

**ABSTRACT OF THE DISCLOSURE**

5       A device, method, and system for a fluid cooled micro-scaled heat exchanger is disclosed. The fluid cooled micro-scaled heat exchanger utilizes a micro-scaled region and a spreader region with specific materials and ranges of dimensions, to yield high heat dissipation and transfer area per unit volume from a heat source. The micro-scaled region preferably comprises microchannels, but in alternate embodiments, comprises a micro-porous structure, or micro-pillars, or is comprised from the group of microchannels, a micro-porous structure, and micro-pillars.